

## **USU And Thiokol Join to Test Rocket Propellant Waste as Fuel**

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LOGAN Thiokol Corporation and Utah State University are collaborating on a full-scale evaluation of using residue from rocket motor propellant as a supplementary heating fuel.

Under a contract with the Army, Thiokol is providing 8000 pounds of propellant residue to USU where it will be mixed with coal and burned in one of the campus stoker furnaces. The propellant/coal mixture will burn for about eight hours on January 13, 1998. During the test, researchers will monitor the effects of the propellant residue on furnace performance and monitor stack emissions.

This test burn is the capstone of a study aimed at refining and evaluating alternate uses for propellant binder residue. The residue is a rubber-like material that remains after the ammonium perchlorate, which oxidizes the fuel, is washed out of the propellant.

"Once the ammonium perchlorate is removed, the residue not only looks like rubber, it burns like rubber, not energetically as propellant does," said Dave Taylor, Thiokol project leader.

Small scale tests were conducted at Thiokol, and pilot scale combustion runs were made at the University of Utah. Those tests determined that propellant residue is a viable fuel source when mixed with coal. Brian Anderson, assistant director of facilities operations at USU said the furnaces and emissions will be carefully monitored during the test burn at USU to help determine optimum operating conditions for burning the propellant residue/coal mixture. Anderson said previous smaller tests done by Thiokol indicate the smokestack emissions should not appear any different than when coal is burned alone nor will they pose a health threat.

"This is a collaboration between industry and education because cooperatively we can do something that neither of us can do alone," Anderson said. "This may provide a way to recycle the propellant waste that will be produced as missiles are dismantled."

"Thiokol selected USU for the full-scale evaluation because of the university's close proximity, cooperative attitude, and the physical plant's interest in air quality," said Taylor. "This joint recycling project demonstrates the concern for the environment shared by the military, the private sector and the education community."

Large amounts of propellant waste are expected to be produced as the world's missile supply is decommissioned. Thiokol is an industry leader in rocket motor demilitarization technology, focused on beneficial use of recovered materials. Taylor said, the company hopes to eliminate the need to dispose of propellant waste by open burning through reclamation and converting waste to commercial chemicals or other useful products.

Solid propellant can be washed from rocket motors by a high pressure water system. The ammonium perchlorate leached out by the water is recovered for reuse. The study at USU will try to show that the residue left after the wash out can be used in boiler furnaces as a practical fuel supplement.

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